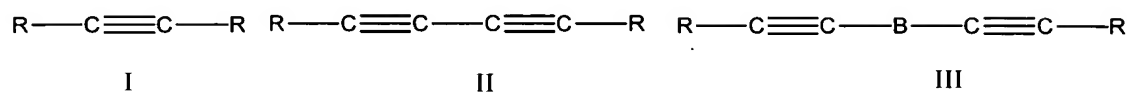
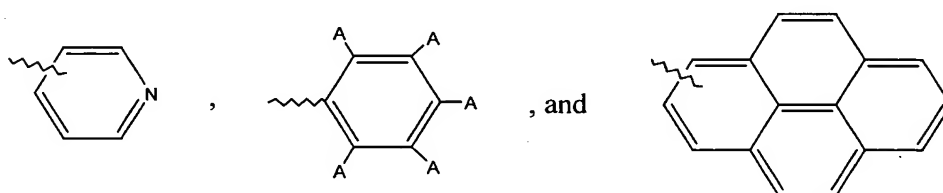


What is claimed is:

1. A conducting molecule according to Formula I, II, or III:

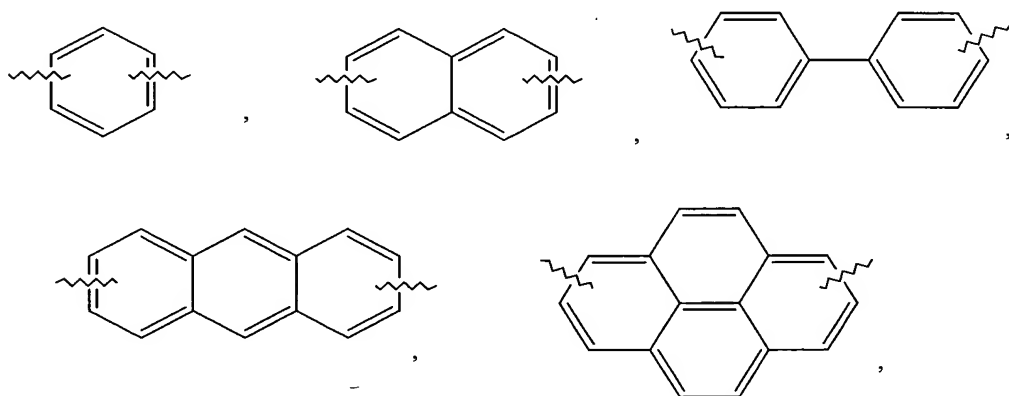


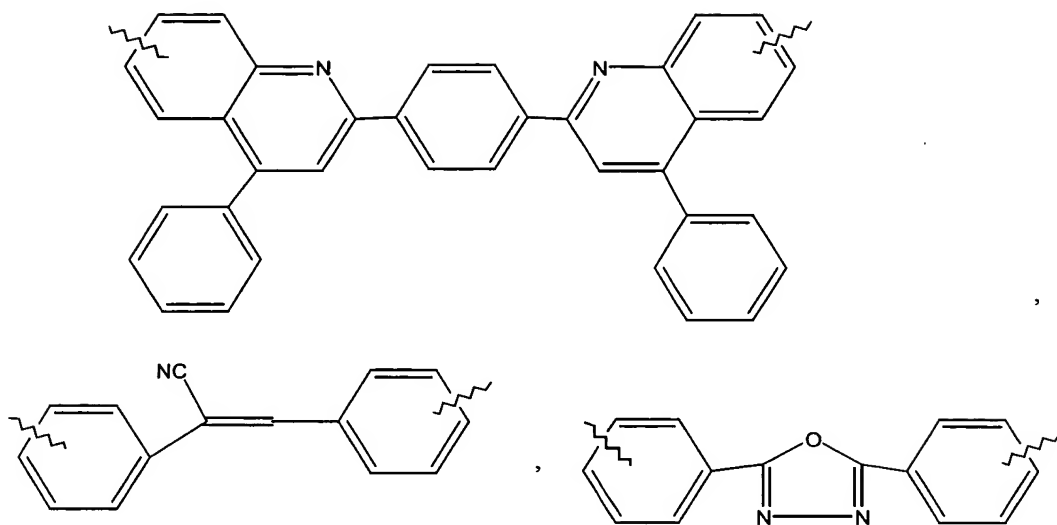
wherein R is independently selected from the group consisting of:



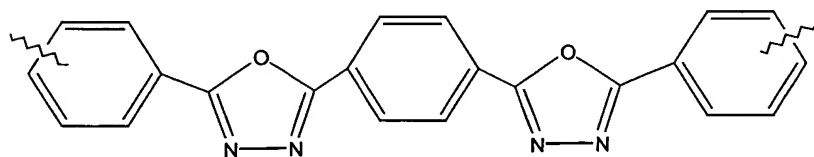
wherein A is independently selected from the group consisting of H, a C1-C6 alkyl group, F, -CN, and -S-C(=O)-CH<sub>3</sub>, wherein at least one of F, -CN, and -S-C(=O)-CH<sub>3</sub> is present;

and B is selected from the group consisting of:





and

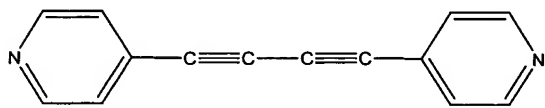


wherein B is optionally substituted with H, a C1-C6 alkyl group, F, -CN, -NO<sub>2</sub>, and -S-C(=O)-CH<sub>3</sub>.

5

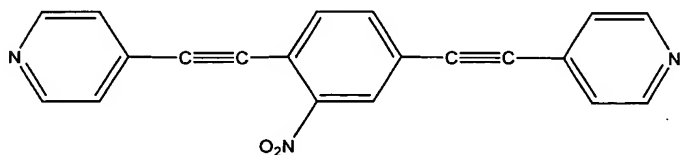
2. A conducting molecule according to Claim 1 selected from the group consisting of:

(a)

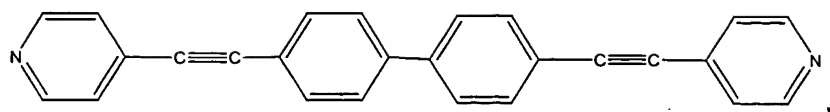


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(b)

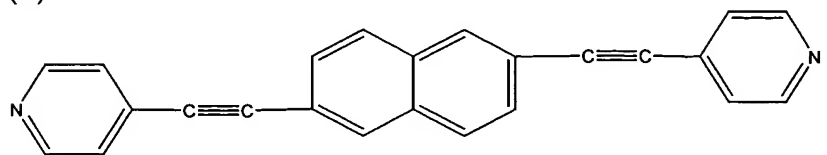


(c)

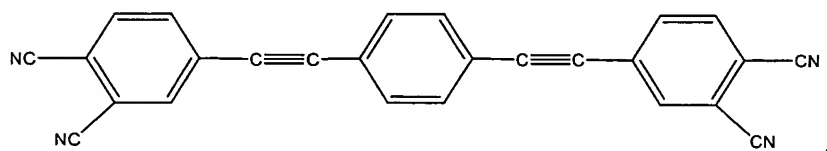


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(d)

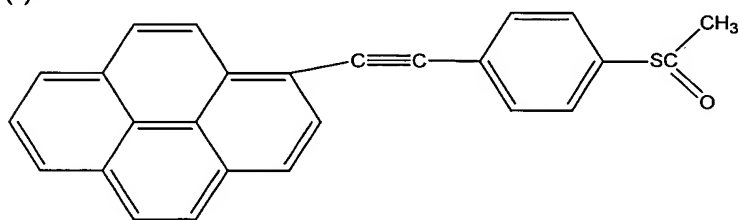


(e)



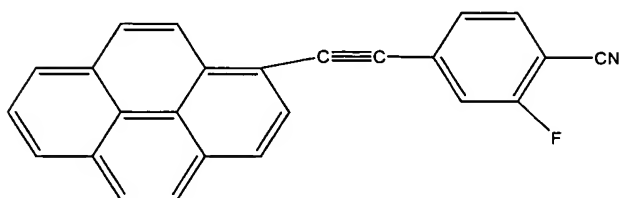
10

(f)

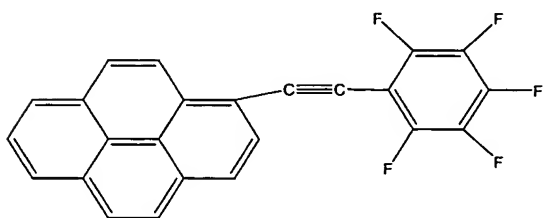


(g)

15

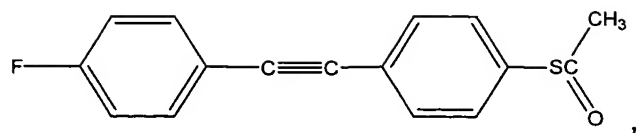


(h)



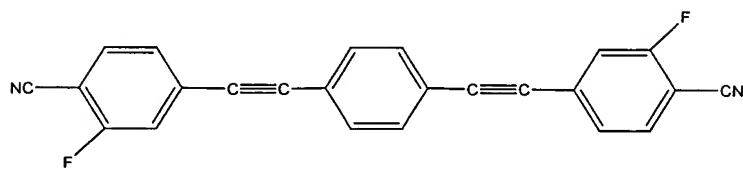
20

(i)



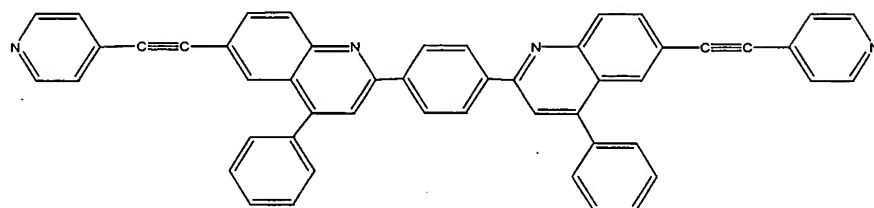
(j)

5

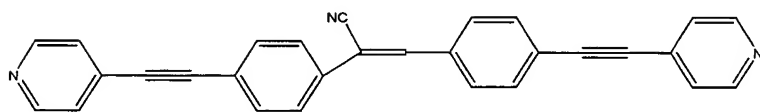


(k)

10

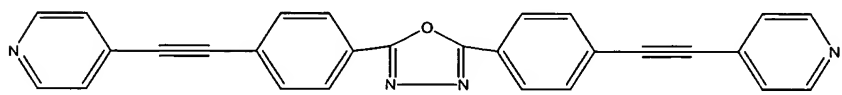


(l)



15

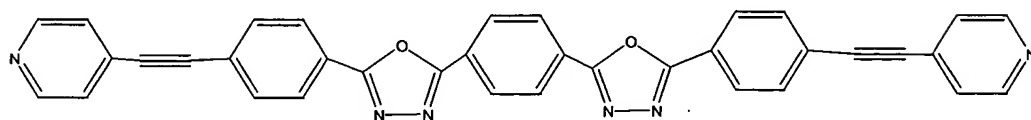
(m)



and

20

(n)



25 3. A molecular based memory system, molecular wire, or molecular switch, comprising a composition or either of Claim 1 or Claim 2.

4. A process for synthesizing a supramolecular structure comprising the steps of:

- (a) providing a conducting molecule of any of Claims 1 or 2;
- 5 (b) providing a suitable substrate;
- (c) contacting the conducting molecule of (a) with the substrate of (b) wherein the conducting molecule is immobilized on the substrate;
- 10 (d) contacting the immobilized conducting molecule of (c) with a redox or photochemical reagent under conditions wherein the immobilized conducting molecule is activated; and
- (e) contacting the activated conducting molecule with the conducting molecule of step (a) wherein molecular addition takes place and a supramolecular structure is formed.

15 5. A process according to Claim 4 wherein steps (d) and (e) are optionally repeated.

20 6. A process according to Claim 4 wherein the substrate is selected from the group consisting of silicon wafers, synthetic polymer supports, glass, agarose, nitrocellulose, nylon, nickel grids or disks, carbon supports, aminosilane-treated silica, polylysine coated glass, mica, and semiconductors.

25 7. A supramolecular structure synthesized by the process of Claim 4.

8. A sensor comprising a supramolecular structure synthesized by the process of Claim 4.